REMARKS

The references to United Kingdom patent applications referred to on page 3 of the Specification have been changed to their corresponding PCT and U.S. patent applications.

Sketches showing changes in FIGs. 1 and 2 in red ink are attached, similar changes having been made to both figures for consistency. FIG. 1 has been identified as prior art.

Takeuchi et al. is cited by the Examiner against Claim 1.

Takeuchi specifically describes a packet switch and not an ATM switch. There is a difference in that while ATM can be used for packet switching, packet switching cannot necessarily be used for ATM. See, for example, the paper by Thomas et al. (Col. 1, lines 34 to 41). Takeuchi then criticizes the Thomas switch (Col. 1, lines 50 to 68) and proposes an alternative construction in the description of the preferred embodiments.

Takeuchi further discusses (Col. 1, lines 20 to 34) the difference between ATM and STM switching for use with ISDN and concludes that ATM is preferable to STM because of the ease of system expansion and development (Col. 1, lines 32 to 34).

Thus, Takeuchi specifically rejects an STM switch and, by implication, also rejects an ATM switch by describing a packet switch having earlier referred to an ATM switch.

Support for the above discussion is provided by page 147 of "Asynchronous Transfer Mode Solution for Broadband ISDN" by Martin De Prycker, Second Edition, published by Ellis Horwood in 1993. A copy of the relevant page, title page and back cover, having a biography of the author are attached and the Examiner is referred to the paragraph beginning "The switching architectures developed for STM ---".

Accordingly, the Examiner's view that it would have been obvious to one of ordinary skill in the art to adapt the ATM switch of Takeuchi et al. to perform STM switching must be considered moot.

Beshai et al. describes a switch for ATM or hybrid ATM/STM operation, but it does not describe a pure STM switch as claimed in the present invention, nor does it suggest that use as a pure STM switch is possible. An 80% STM, 20% ATM switch is the greatest extent of STM use suggested (Figure 9).

The architectures of Takeuchi and Beshai are radically different, and Beshai does not include the plurality of data switching planes and a parallel control plane, neither is the data switched in octets. The two switches are so different in appearance that it would not have been clear to one skilled in the art how to use the architecture of Beshai in the switch of Takeuchi. It is in fact doubtful whether such an arrangement is

even possible and certainly whether it is even likely to be a practicable arrangement.

Allowance of all claims is respectfully requested.

Petition is hereby made for a three-month extension of the period to respond to the outstanding Official Action dated November 29, 1993, to May 28, 1994. A check in the amount of $840.00, as the Petition fee, is enclosed. If there are any additional fees due, or if an overpayment has been made, in connection with the filing of this Amendment, the Commissioner is hereby authorized to charge any deficiencies, or credit any overpayment, to Deposit Account No. 11-1145.

Wherefore, a favorable action is earnestly solicited.

Respectfully submitted,

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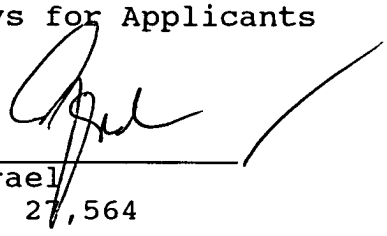
Attorneys for Applicants



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ASYNCHRONOUS TRANSFER MODE
Solution for Broadband ISDN

Second Edition

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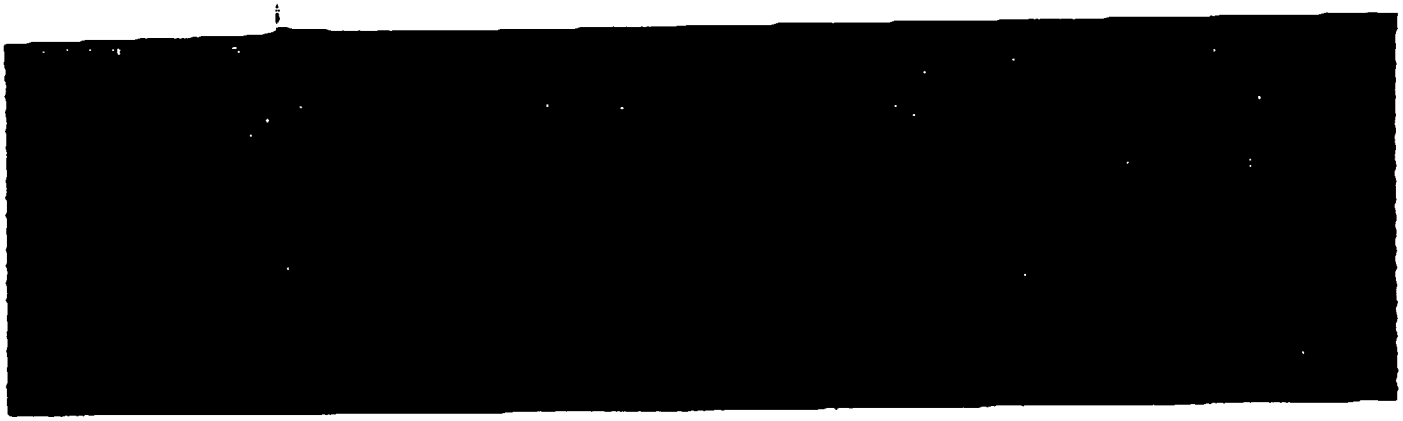

ASYNCHRONOUS TRANSFER MODE
Second Edition

Martin de Prycker

ATM has been selected as the world standard for broadband ISDN for the public network. It has also been adopted as the solution for the future private local area networks. This book provides an up-to-date review of the functions of all network entities of the future broadband ISDN and ATM LANs. It also explains why options have been defined as such. This invaluable guide covers information for the specification, design, purchase and installation of ATM-based systems.

Topics covered include transfer modes for BISDN, ATM switching, ATM specifications as defined by CCITT and ATM FORUM, ATM LANs and MANs (Metropolitan Area Networks), ATM traffic parameters, broadband terminals and introduction scenarios for ATM. For each topic, alternative solutions are explained and their advantages and drawbacks evaluated.

Based on the author's considerable experience in the field, a comprehensive bibliography is included.

This book covers all aspects of the ATM systems, both in the public and private networks. It also contains an up-to-date status of all related ATM standards.

Readership
All those involved in communication and networking from graduate level upwards.

Telecommunications research, development, engineering, planning, purchase and installation in industry, public operators, private network planning etc. Textbook for graduate course in communications programs.

Biography
Professor Martin de Prycker works at the Research Center of Alcatel Bell in Antwerp. He is the author of over sixty technical papers and the holder of three patents.

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Broadband ATM Switching

4.1. INTRODUCTION

In the past, various switching architectures were developed for different applications such as voice and data, based on transfer modes like STM (Synchronous Transfer Mode) and packet switching. These switching architectures have been adapted during history as the available technology allowed other, more cost effective solutions. For instance, for telephone services alone, a large number of different types of switches have already been developed in the past, ranging from mechanical switches (crossbar, Strowger, ...), via semi-electronic to fully electronic (analog and digital) switches, based on the STM principle.

The switching architectures developed for STM are not directly applicable to broadband ATM. Nor are the architectures developed for conventional (e.g. X.25) packet switching. Indeed, two major factors have a large impact on the implementation of broadband ATM switching architectures :

- The high speed at which the switch has to operate (from 150 up to 600 Mbit/s).
- The statistical behavior of the ATM streams passing through the ATM switching systems.

In addition, the definition of ATM with a small fixed cell size and a limited header functionality has an important influence on the definition of optimal ATM switching architectures. A large number of alternative switching architectures have been described in the literature and some of them have been realized, or are in the stage of implementation.

Today, a large number of ATM switches are commercially available from large telecommunication companies and also from small start-up companies. These commercial systems have sizes ranging from very small (4 inputs and outputs) to very large (thousands of inputs and outputs).

These ATM switching products are installed by public operators to offer a public wide area broadband service, and by private users to fulfil internal high speed telecommunication needs. In the first case (public), these systems are sometimes